Hydrothermal carbonization of Peat Moss and Herbacious Biomass (Miscanthus): A potential route for bioenergy

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SI-1 Feedstock, processing temperature, products of HTC process.

Feedstock	HTC Temp (^{0}C)	Solid yield (%)	Liquid yield (%)	Gas yield (%)	Reference
Sugarcane Bagasse	215	64.0	8.0	4.0	(1)
Rice hulls	235	64.33	25.37	5.23	(1)
Corn stove	235	56.41	32.41	7.79	(1)
Jeffery pine and White fir	180-250	50-69	12-14	5-12	(2)
Loblolly Pine	-	63-83	8-17	9-20	(3)
Tahoe mix	235	63.68	17.66	7.86	(1)
Pinyon/juniper	235	62.73	30.37	6.13	(1)

Note: The main components in gas and volatile acids were are reported to be CO2 and acetic acid (4). Therefore, authors assumed that the gas and volatile acids are all CO_2 and acetic acids, respectively due to their high abundance in the gas and liquid streams.

Reference

1. Hoekman SK, Broch A, Robbins C, Zielinska B, Felix L. Hydrothermal carbonization (HTC) of selected woody and herbaceous biomass feedstocks. Biomass Convers Biorefinery. 2013;3(2):113–26.
2. Coronella CJ, Lynam JG, Reza MT, Uddin MH. Hydrothermal carbonization of lignocellulosic biomass. In: Application of hydrothermal reactions to biomass conversion. Springer; 2014. p. 275–311.
3. Zhang Z, Wang K, Atkinson JD, Yan X, Li X, Rood MJ, et al. Sustainable and hierarchical porous Enteromorpha prolifera based carbon for CO2 capture. J Hazard Mater. 2012;229:183–91.
4. Yan W, Hastings JT, Acharjee TC, Coronella CJ, Vásquez VR. Mass and energy balances of wet torrefaction of lignocellulosic biomass. Energy & Fuels. 2010;24(9):4738–42.